I Claim:

1. A method to detect wood destroying insect infestation sites in a structure comprising:

(a) performing a thermal scan of said structure to identify potential infestation sites;

(b) positioning acoustic sensors at said potential infestation sites to detect vibration signals between 100 hertz and 15 kilohertz;

(c) transmitting detected vibration signals to a computing device for comparing said detected vibration signals with control signals; and

(d) detecting wood destroying insect infestation if detected signals are substantially similar to said control signals.

2. The method of claim 1 further comprising the steps if:

(a) applying heat to said structure prior to performing a thermal scan; and

(b) detecting temperature differences.

3. The method of claim 1 further comprising the steps of:

(a) applying cold to said structure prior to performing a thermal scan; and

(b) detecting a temperature difference.

4. The method of claim 1 wherein comparing said detected vibration signals is conducted by a computing device selected from the group consisting of a centrally located computing device and a portable computing device, operably connected with a database library of wood destroying insect sounds.

5. The method of claim 1 wherein comparing said detected vibration signals with control signals involve acoustic pattern recognition.

6. The method of claim 1 wherein in said sensors are continuously monitored for termite infestation.

7. The method of claim 1 wherein said thermal scan involves an infrared camera.

8. The method of claim 1 wherein said thermal scan further includes comparing the thermal scan with frequency spectra of a referenced image.

9. The method of claim 1 wherein said detection vibration signals are between 0.5 and three milliseconds in length.

10. A system to detect wood destroying insect infestation sites in a structure comprising:

(a) means to perform a thermal scan of a structure to locate potential infestation sites;

(b) means to acoustically detect termite activity sounds at potential infestation sites;

(c) means to compare detected termite activity sounds, with a library of prerecorded termite activity sounds; and

(d) means to determine if detected termite activity sounds are substantially similar to prerecorded termite activity sounds.

11. The system of claim 10 further including:

(a) means to apply heat to said structure; and

(b) means to detect a temperature change.

12. The system of claim 10 further including:

(a) means to apply cold to said structure; and

(b) means to detect a temperature change.

13. The system of claim 10 wherein the means to perform a thermal scan is a thermal imaging camera which further includes wood destroying insect infestation filtering software.

14. An acoustical sensor comprising:

(a) detection member having a proximal and distal end, said proximal end contacting a diaphragm and said distal end be configured to be inserted into a potential infestation site without damaging the structure;

(b) a means to mechanically amplify the sound produced by said diaphragm; and

(c) a means to convert said sound to an electrical signal.

15. The sensor of claim 14 wherein said detection member is a spike permanently attached to said sensor.

16. The sensor of claim 14 wherein said detection member is a probe reversibly attached to said sensor.

17. The sensor of claim 14 wherein said electrical signal is transmitted to a controller.

18. The sensor of claim 14 wherein the controller includes a low noise amplifier.

19. The sensor of claim 14 wherein the controller includes a band pass filter from between 100 Hz to about 15 kHz.

20. A method of detecting the presence of termites concealed in a structure, comprising the step of:

(a) sensing noises made by the termites using a laser Doppler vibrometer.

21. A system for evaluating concealed structural damage caused by termites, comprising:

(a) a vibration inducing device; and

(b) laser Doppler vibrometer for determining the extent of concealed structural damage caused by said termites.

22. A method for evaluating concealed structural damage caused by termites, comprising the steps of:

(a) inducing vibrations in the structure; and

(b) using an active laser Doppler vibrometer to determine the extent of concealed structural damage caused by said termites.

23. The method of claim 22 wherein said structure is a tree.

24. A system for modifying termite behavior, comprising:

(a) a library of data concerning responses by termites to applied acoustic stimuli; and

(b) a device for applying a selected acoustic stimulus to a structure containing termites in order to invoke a desired response.

25. A method of modifying termite behavior, comprising the steps of:

(a) referring to a library of data concerning responses by termites to applied acoustic stimuli; and

(b) applying a selected acoustic stimulus to a structure containing termites in order to invoke a desired response.

26. A method of collecting data and information concerning termites, comprising the steps of:

(a) using acoustic sensors to detect termites in a structure; and

(b) transmitting data collected by the sensors to a central operations center for inclusion in a central database of termite data and information.

27. A method to detect wood destroying insect infestation of a structure comprising:

(a) affixing the acoustical sensor of claim 14 to portions of a structure;

(b) communication signals from said sensor to a computing device;

(c) comparing detected signals with control signals; and

(d) detecting wood destroying insect infestation of said structure if said detector signal is substantially similar to said control signals.

28. The method of claim 27 wherein said detection vibration signals are between 0.5 and three milliseconds in length

29. The method of claim 27 wherein said computing device is a central processor.

30. The method of claim 27 wherein said computing device is a hand held process.

31. The method of claim 27 wherein said wood destroying insects are termites.

32. The method of claim 27 wherein the control signal stored in the computing device is modified to include the detected signals.

33. A method to disturb insect infestation behavior in a structure comprising:

(a) providing structural borne acoustic vibration having a frequency of between 100 Hz to 4000 Hz and an amplitude of as low as 2×10^{-8}m displacement to a structure;

(b) modulating the structure borne acoustic vibration to disturb termite infestation behavior.

34. The method of claim 33 wherein the insect is selected from the group consisting of:

a) termites;

b) fire ants;

c) carpenter ants;

d) carpenter bees; and

e) wood boring beetles.